

REMARKS

Amendments

Claim 1 is amended above to incorporate the recitations of claims 2-6. As a result of this amendment, claims 2, 5, 6, 7, 10, 11, 12, and 22 are cancelled. In addition, claims 3, 4, 17, 20, 24 and 25 are amended to be dependent on claim 1, rather than cancelled claim 2, and claims 15 and 16 are amended to be dependent on claim 8 and 9, rather than cancelled claims 10 and 11.

Claim 17 is amended to delete the duplicate “a” and to use the term “optionally,” rather than an optional. Claims 21 and 23 are amended to recite that the “other regions” have concave shapes that are of a greater depth than those at the end regions. This concept is supported by the disclosure at page 7, line 21 - page 8, line 2 which refers to limiting the depth of the concave shapes in the regions beneath the tie plate.

New claims 26-34 are directed to further aspects of applicants’ invention. These claims are supported throughout the disclosure. See, e.g., page 7, lines 1-4; page 7, line 21 - page 8, line 6; and page 9, lines 25-30.

Objection to the Drawings

Enclosed herewith are proposed drawing corrections. These proposed drawings show the shapes and arrangements of the concave shapes recited in the claims including the arrangement of concave shapes recited in claims 21, 23 and 26. Approval of the proposed drawings is respectfully requested.

Proposed new figure 1 is similar to original figure 1 showing a cross section of the tie with truncated depressions. Proposed new figure 2 is similar to original figure 2 and shows the truncated cone concavities. Proposed new figure 3 is similar to original figure 3 and shows a staggered arrangement. Proposed new figure 4 illustrates truncated pyramid shapes. Proposed new figure 5 illustrates a tie with shapes of different depths.

Objection to the Declaration

Applicants will submit a new Declaration that sets forth the zip code designations of the inventors' post office addresses.

Rejection under 35 USC §112, second paragraph

Claims 9, 11, 16-19, and 24-25 are rejected as allegedly being indefinite. This rejection is respectfully traversed.

Applicants' claim 9 does not recite a "diameter," but instead recites an "effective diameter." The concept of an effective diameter is a common engineering concept. It refers to the diameter of a circle having the area as that of the shape in question. See, e.g., Hackman (US 5,571,628; copy enclosed) at column 2, lines 31-34.

Contrary to the assertion in the rejection the recitation of "optional" features does not render a claim indefinite. See, e.g., *Ex parte Cordova*, 10 USPQ2d 1949 (Bd. Pat. App. & Inter. 1989), *Ex parte Wu et al.* 10 USPQ2d 2301 (Bd. Pat. App. & Inter. 1989), and MPEP §2173.05(h).

As for claim 24 and 25, one of ordinary skill in the art reading these claims would recognize that the recited "attachment" describes an active method step. In any event, these claims are amended to recite "attaching" of the rails to at least one railroad tie.

In view of the comments above, applicants disagree that the alleged indefiniteness prevented claims 9, 16, and 24-25 from being examined and treated on the merits.

In view of the remarks above, withdrawal of the rejection is respectfully requested.

Rejection under 35 USC §102

Claim 1 is rejected as allegedly being anticipated in view of Garber (US 1,297,828). This rejection is rendered moot by the incorporation of the features from claims 2-6 into claim 1. It is noted that claims 2-6 were not rejected as being anticipated in view of Garber. Withdrawal of the rejection is respectfully requested.

Rejection under 35 USC §103 in view of Nosker et al. and Garber

Claims 1-2, 12, and 21-22 are rejected as being obvious in view of Nosker et al. (US 5,916,932) in combination with Garber (US 1,297,828). This rejection is rendered moot by the incorporation of the features from claims 3-6 into claim 1. It is noted that claims 3-6 were not rejected as being obvious in view of Nosker et al. and Garber.

Moreover, contrary to the assertion in the rejection, Garber does not disclose the depth of the concavities 10. See column 1, lines 44-47 which presents the entire description of concavities 10. Further, there is nothing in the disclosure of Garber or in the rejection to indicate that the features of the tie disclosed by Garber are drawn to scale. Further, Garber does not disclose what depth the concavities should be to provide the stated resistance. The rejection, in its asserted "common sense" argument does not indicate what range of depths would be suitable or how resistance to sliding would vary over such a suitable range.

In any event, withdrawal of the rejection is respectfully requested.

Rejection under 35 USC §103 in view of Nosker et al. and Reis

Claims 1-8, 10, 12-15 and 17-23 are rejected as being obvious in view of Nosker et al. (US 5,916,932) in combination with Reis (US 2,051,619). This rejection is respectfully traversed.

Nosker et al. disclose a building composite material which comprises a polymer component and a coated fiber component, which is distributed within the polymer component. The polymer component which makes up at least 20 wt% of the composite is made of about 80-100 wt% high density polyethylene. See column 2, lines 24-39. The composite is characterized as a wood substitute which can be formed into lumber, railroad ties, telephone poles, guard rail poles, and can be used in the construction of piers and boardwalks. See column 4, lines 32-39. Nosker et al. does not disclose or suggest the use of concavities in plastic composite rail road ties or how to make such concavities.

Reis discloses a composite concrete railroad tie having two tie bodies that engage one another using a tongue 11 and groove 10 arrangement. See Figure 1 and column 3, lines 5-13. The composite tie is designed to provide a degree of "yieldness." To this end only one end of each tie body is fastened to a rail. The other end of each tie body has an upwardly inclined bottom surface 6. Thus the sloped end of the tie is free to move relative to the rail resting thereon. See column 2, lines 39-45 and column 3, lines 48-58.

The bottom surface of each of the tie bodies described by Reiss are provided with recesses 5 and vertical openings 4 which permit the passage of bolts 14 for fastening the tie bodies to the rails. See column 2, lines 34-38, column 3, lines 19-33, and Figures 2 and 5. Reis does not describe the use of recesses 5 for gripping the rail road bed. Nor does Reis describe modifying the size, depth, arrangement, shape, or the angle of internal inclination of these recesses 5.

The bottom surface of each tie body is also provided with recesses 9 "for greater grip of the body to the foundation, or road bed." See column 2, lines 46-51 and Figures 2 and 3. Reis describe modifying the size, depth, arrangement, shape, or the angle of internal inclination of these recesses 9. Reis does not suggest what factors one would adjust to affect gripping of the rail road bed or what ranges one would use for selecting, for example, the diameter, depth, or angle of inclination for the recesses 9. In fact, Reis does not disclose any values for the depth, size, and/or angle of inclination for recesses 9.

As noted above, the Reis composite tie is directed to a specific design of a concrete tie. Reis provides no suggestion of how one would modify plastic composite railroad ties.

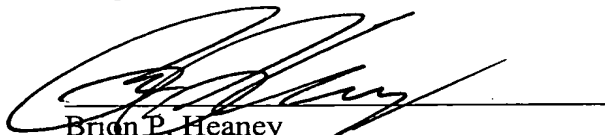
In the rejection, it is asserted that the angles of the recesses 5 of Reis are approximately the same as the claimed angle. Yet, Reis provides no description of this angle and there is nothing within the disclosure of Reiss to suggest that the drawings are drawn to scale. Further, there is no basis for asserting that such a feature is insignificant. All features recited in a claim must be considered. See, e.g., *In re Angstadt et al.*, 190 USPQ 214 (CCPA 1976). Nor does the rejection indicate how “common sense” would lead one to modify the cone angle within a given range or arrive at the claimed angle.

In situations where a reference does not disclose that the drawings presented therein are drawn to scale and is silent regarding dimensions, one can not rely on the drawings to show precise dimensions. See, e.g., *Hockerson-Halberstadt, Inc. v. Avia Group Int'l*, 222 F.3d 951, 956, 55 USPQ2d 1487, 1491 (Fed. Cir. 2000) [“[I]t is well established that patent drawings do not define the precise proportions of the elements and may not be relied on to show particular sizes if the specification is completely silent on the issue.”]. See also MPEP §2125.

The rejection also argues that the diameter and depth of the recesses disclosed by Reis are approximately within the claimed range. Here again, Reis provides no description of diameter and depth of the recesses and there is nothing within the disclosure of Reiss to suggest that the drawings are drawn to scale. Further, there is nothing within the rejection or within the disclosure that ranges recited in applicants’ claims or within what range one would select the depth and/or diameter of the recesses. Also, the rejection does not indicate how “common sense” would lead one to modify the diameter and depth of the recesses within a given range or arrive at the claimed ranges.

In view of the above remarks, it is respectfully submitted that Nosker et al., taken alone or in combination with Reis, fails to render obvious applicants' claimed invention. Withdrawal of the rejection is respectfully requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Brian P. Heaney", is written over a horizontal line.

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Please cancel claims 2, 5, 6, 7, 10, 11, 12, and 22.

Please amend the claims as follows:

--1. (Amended) A railroad tie comprising:

a railroad tie having at least four longitudinal sides, two end faces and a longitudinal axis, ~~wherein said tie is made from wood, concrete or polymeric material, and~~ wherein at least one longitudinal side has an arrangement of concave shapes in the surface thereof, said shapes having a depth of at least 1/8 of an inch and having sidewalls which are at an angle of less than 90°, wherein said tie is made from polymeric material, and

said concave shapes are in the form of truncated cones in which the sides of the truncated cone shapes are at an angle of 30-60 degrees with respect to said at least one longitudinal side, or said concave shapes are truncated pyramidal shapes in which the sides of the truncated pyramidal shapes are at an angle of 30-60 degrees with respect to said at least one longitudinal side.

3. (Amended) A railroad tie according to claim 1 ~~2~~, wherein said concave shapes are in the form of truncated cones.

4. (Amended) A railroad tie according to claim 1 ~~2~~, wherein said concave shapes are truncated pyramidal shapes.

15. (Amended) A railroad tie according to claim 8 ~~10~~, wherein the concave shapes have a depth of 1/4 - 1/2 inches.

16. (Amended) A railroad tie according to claim 9 ~~11~~, wherein the concave shapes have a depth of 1/4 - 1/2 inches.

17. (Amended) A railroad tie according to claim 1 ~~2~~, wherein said tie is formed from a ~~a~~ material comprising a polymeric component selected from polyolefins,

polystyrene, rubber and mixtures thereof, and optionally a ~~an optional~~ filler component selected from fiber glass, mineral fillers, wood fibers, steel fibers and mixtures thereof.

20. (Amended) A railroad tie according to claim 1 ~~2~~, wherein said tie is formed from a plastic composite material comprising 20-50 wt% of a polystyrene component and 50-80 wt% of a polyolefin component, and said polystyrene component contains at least 90 wt% polystyrene and said polyolefin component contains at least 75 wt% high density polyethylene.

21. (Amended) A railroad tie according to claim 1, wherein regions adjacent each end of said at least one longitudinal side have said concave shapes with a depth of less than 1 inch while other regions of said at least one longitudinal side have concave shapes with a depth greater than the depth of the concave shapes in said regions adjacent each end, the depth of said concave shapes in said other regions being of up to 2 inches and sidewalls at an angle of less than 90°.

23. (Amended) A railroad tie according to claim 3, wherein regions adjacent each end of said at least one longitudinal side have said concave shapes with a depth of less than 1 inch while other regions of said at least one longitudinal side have concave shapes with a depth greater than the depth of the concave shapes in said regions adjacent each end, the depth of said concave shapes in said other regions being of up to 2 inches and sidewalls at an angle of less than 90°.

24. (Amended) In a method of maintaining desired spacing between railroad rails comprising attaching ~~by attachment of~~ said rails to at least one railroad tie, the improvement wherein said at least one railroad tie is in accordance with claim 1 ~~2~~.

25. (Amended) In a method of providing a weight bearing support surface for railroad rails comprising attaching ~~by attachment of~~ said rails to at least one railroad tie, the improvement wherein said at least one railroad tie is in accordance with claim 1 ~~2~~--